Растителна защита
електронно списание за растителна защита
семена, торове и земеделие
ISSN 2815-522X

Verbena – rely on security

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Date: 22.01.2024 *Issue:* 1/2024

Preventive control is the best protection against root rots in cereals

The types of root rots represent a serious threat to cereal crops, causing the death of young plants, which leads to yield reduction. A high infectious background is observed in monoculture cultivation of wheat and barley or when maize is the preceding crop, after which a significant amount of plant residues remains. Another precondition for disease occurrence is root suffocation, which is due to a warm and dry autumn during which the residues from the preceding crop cannot decompose properly, followed by snowfall and waterlogging, which lead to compaction of the soil horizon and in particular of the surface soil layer where the main mass of the roots of cereal crops is located, as happened during the past autumn.

ISSN 2815-522X

In a number of regions, serious problems in monoculture cultivation of wheat and barley are created by rotting of the roots and the basal parts of cereal crops. Their causal agents are widely distributed fungi found on the surface and inside the seeds, in the soil and on plant residues. They are caused by a complex of soil-borne pathogens that induce death and destruction of the root and crown zone of the plants and cause damage to the vascular system. As a result, suppressed plant growth, yellowing and drying of leaves, stem bleaching, white heads, delayed heading, shrivelling of the grains and empty ears, and loss of productive stems are observed. Infection from root rots accumulates in the soil, especially under continuous cultivation of cereals, on the plant residues. Transmission of infection through the seeds is also possible.

The main causal agents of root rots are – **Fusarium root rot** (Fuzarium sp.), **Basal stem rot and parasitic lodging in cereals** and **Helminthosporium root rot**

One of the methods for controlling root rots in cereals is early vegetative treatment with a highly effective fungicide against these pathogens, such as Verben®.

How Verben works:

Verben® is equipped with a specialized formulation of Prothioconazole and Proquinazid, developed for controlling all economically important diseases in cereal crops, including root rots in early spring. Verben not only controls the diseases, but stops their development in the early stages. Verben® is distinguished by the following practical advantages:

- Gas phase acting as a shield, protecting even untreated tissues.
- Enhances the immune response of the crop
- Stops the viability of spores, thus preventing the cycle of reinfection upwards in the plant
- Directly inhibits the development of germinating spores and infection
- Has strong preventive, stopping and curative action

Verben® dries quickly on plant surfaces and has excellent resistance to wash-off, equal to the best market standards. The established depots of Verben® in the cuticle of the wax layer act as a reservoir for the active substances. This provides excellent residual activity and protection against economically important diseases in

ISSN 2815-522X

cereals, as well as rapid absorption of the active substances from the plant surface, ensuring curative action and long-lasting protection.

Based on three-year trials conducted in Bulgaria, our recommendation for the control of root rots in cereal crops is that Verben should be applied early in spring, at the tillering stage of cereals at a rate of 60 ml/da. At this rate and timing of application, Verben is highly effective also for preventive protection against septoria leaf blotch, powdery mildew, net blotch, ramularia and early occurring rust species.